

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An isolated Nod-factor binding element comprising:
 - a) one or more isolated first Nod-factor binding polypeptide (~~NFR polypeptide~~)
having an comprising at least 70% amino acid sequence identity that is at least identical to SEQ ID NO:8; or
 - b) a fragment of said first polypeptide;
wherein said one or more first polypeptide or fragment comprises at least 2 extracellular domain LysM motifs; and
wherein said one or more first polypeptide or fragment can selectively bind strain-specific forms of Nod-factor.
having a specific Nod-factor binding property or a functional fragment thereof, wherein the amino acid sequence of said NFR polypeptide is at least 60% identical to SEQ ID NO:8.

2. (Withdrawn, Currently Amended) ~~The~~ An isolated Nod-factor binding element comprising; of claim 1, wherein said
 - a) one or more isolated second Nod-factor binding polypeptide (NFR polypeptide) is NFR+ comprising at least 70% the amino acid sequence identity to selected from the group consisting of SEQ ID NO: 24, 25, 52, and 54; or
 - b) a fragment of said second polypeptide;
wherein said one or more second polypeptide or fragment comprises at least 2 extracellular domain LysM motifs; and

wherein said one or more second polypeptide or fragment can selectively bind strain-specific forms of Nod-factor.

3. (Currently Amended) The isolated Nod-factor binding element of claim [1] 4, wherein said one or more first polypeptide (NFR polypeptide) is NFR5 comprising comprises the an amino acid sequence selected from the group consisting of SEQ ID NO: 8, 15, 32, 40, ~~and 48~~, and fragments thereof; and

wherein said one or more second polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 24, 25, 52, 54, and fragments thereof; and

wherein said first and second polypeptides or fragments each comprises at least 2 extracellular domain LysM motifs and can selectively bind strain-specific forms of Nod-factor.

4. (Currently Amended) The isolated Nod-factor binding element of claim 1, further comprising:

a) ~~a NFR polypeptide or a functional fragment thereof, wherein the amino acid sequence of said NFR polypeptide is that is at least 60% identical to SEQ ID No: 24 or 25; and b)~~

a NFR an isolated second Nod-factor binding polypeptide or a functional fragment thereof, wherein the comprising at least 70% amino acid sequence identity to of said NFR polypeptide is has at least 60 % identical to a sequence selected from the group consisting of SEQ ID No: 8, 15, and 32 24; or a fragment thereof,
wherein said second polypeptide or fragment comprises at least 2 extracellular domain LysM motifs and can selectively bind strain-specific forms of Nod-factor.

5. (Currently Amended) The isolated Nod-factor binding element of claim 1, comprising:

- a) ~~the NFR~~ an isolated second Nod-factor binding polypeptide, that is NFR1 or a functional fragment thereof, having the comprising an amino acid sequence selected from the group consisting of SEQ ID No: 24, 25, 52, and 54; or a fragment of said first polypeptide; and
- b) ~~the NFR~~ an isolated first Nod-factor binding polypeptide that is NFR5 or a functional fragment thereof, having comprising an amino acid sequence selected from the group consisting of SEQ ID No: 8, 15, 32, 40, and 48; or a fragment of said second polypeptide;

wherein said first and second polypeptide or fragments each comprises at least 2 extracellular domain LysM motifs and can selectively bind strain-specific forms of Nod-factor.

6. (Withdrawn, Currently Amended) An isolated nucleic acid molecule encoding a ~~NFR~~ first Nod-factor binding polypeptide or fragment according to claim 1, ~~wherein the NFR amino acid sequence is at least 70% identical to either of SEQ ID No: 8, 15, or 25.~~

7. (Withdrawn, Currently Amended) An isolated nucleic acid molecule encoding a ~~NFR1~~ second Nod-factor binding polypeptide or fragment according to claim 2, ~~comprising the amino acid sequence selected from the group consisting of SEQ ID No: 24, 25, 52, and 54.~~

8. (Withdrawn, Currently Amended) An isolated nucleic acid molecule encoding a ~~NFR5~~ first or second Nod-factor binding polypeptide or fragment according to claim 3, ~~comprising an amino acid sequence selected from the group consisting of SEQ ID No: 8, 15, 32, 40, and 48.~~

9. (Withdrawn, Currently Amended) An isolated nucleic acid molecule which encodes a first or second Nod-factor binding polypeptide or fragment of claim 3, a Nod-factor binding element, wherein said nucleic acid molecule hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID No: 6, 7, 11, 12, 21, 22, 23, 39, 47, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C.

10. (Withdrawn, Currently Amended) An expression cassette comprising a nucleic acid molecule encoding an ~~NFR~~ one or more first or second Nod-factor binding polypeptide having a specific Nod-factor binding property, or a functional fragment thereof, wherein said polypeptides or fragments comprise at least 2 extracellular domain LysM motifs and can selectively bind strain-specific forms of Nod-factor, and wherein said Nod-factor binding polypeptide comprises an amino acid sequence;

- a) having at least [6] 70% sequence identity to identical to SEQ ID No: 8, 15, or 25;
- b) selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, and 54; or
- c) encoded by a nucleic acid molecule that hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID No: 6, 7, 11, 12, 21, 22, 23, 39, 47, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C.

11. (Withdrawn) An expression cassette comprising a nucleic acid molecule according to claim 6.

12. (Withdrawn, Currently Amended) The expression cassette of claim 10, wherein the nucleic acid molecule encoding the a NFR Nod-factor binding polypeptide or fragment is operably linked to a transcriptional regulatory element.

13. (Withdrawn) A vector comprising the expression cassette of claim 12.
14. (Withdrawn) A cell that is stably transformed with the expression cassette of claim 12.
15. (Withdrawn) The cell according to claim 14, wherein said cell is a plant cell.
16. (Withdrawn, Currently Amended) A method of producing a plant expressing a Nod-factor binding element, the method comprising:
introducing into the plant a transgenic expression cassette comprising a nucleic acid sequence encoding ~~a NFR~~ one or more Nod-factor binding polypeptide or functional fragment thereof, wherein said Nod-factor binding polypeptide comprises ~~having~~ an amino acid sequence;
- a) selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, and 54;
 - b) having at least [6]70% sequence identity to ~~identical to~~ SEQ ID No: 8, 15, 25, or 32;
 - ~~c) comprising SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, or 54; or~~
 - d) encoded by a nucleic acid molecule that hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID No: 21, 22, 23, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C;
- wherein said polypeptides or fragments comprise at least 2 extracellular domain LysM motifs can selectively bind strain-specific forms of Nod-factor, and
wherein the nucleic acid sequence is operably linked to a promoter, and selecting transgenic plants and their progeny expressing said NFR Nod-factor binding polypeptide.

17. (Withdrawn) The method of claim 16, wherein the transgenic expression cassette is introduced into the plant through a sexual cross.
18. (Withdrawn) The method of claim 16, wherein said promoter is a native or heterologous root specific promoter.
19. (Withdrawn) The method of claim 16, wherein said promoter is a native or heterologous constitutive promoter.
20. (Withdrawn, Currently Amended) A transgenic plant expressing ~~one or more~~ a heterologous NFR Nod-factor binding element ~~polypeptides or functional fragment~~, according to claim 1.
21. (Withdrawn, Currently Amended) The transgenic plant of claim 20, expressing a Nod-factor binding element according to claim 2, and having a specific rhizobial strain recognition.
22. (Withdrawn) The transgenic plant of claim 20, wherein the plant is a non-nodulating dicotyledonous plant.
23. (Withdrawn) The transgenic plant of claim 22, wherein the plant is a non-nodulating monocotyledonous plant.
24. (Withdrawn) The transgenic plant of claim 23, wherein said monocotyledonous plant is a cereal.

25. (Withdrawn, Currently Amended) A method for marker assisted breeding of ~~NFR~~ Nod-factor binding alleles [,] encoding variant Nod-factor binding polypeptides (~~NFR polypeptides~~), comprising the steps of:

- a. determining the nodulation frequency of legume plants expressing a variant ~~NFR~~ Nod-factor binding polypeptide having specific rhizobial strain recognition ~~Nod-factor binding properties~~ and having an amino acid sequence at least [6] 70% identical to a sequence selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, ~~and~~
- b. identifying a DNA polymorphism at a locus genetically linked to or within the allele encoding said variant ~~NFR~~ Nod-factor binding polypeptide, ~~and~~
- c. preparing a molecular marker based on said DNA polymorphism, and
- d. using said molecular marker for the identification and selection of a plant carrying an ~~NFR~~ Nod-factor binding protein allele encoding said variant ~~NFR~~ Nod-factor binding polypeptide.

26. (Withdrawn, Currently Amended) The method according to claim 25, wherein said variant ~~NFR~~ Nod-factor binding polypeptide has an amino acid sequence substantially similar comprising at least 80% sequence identity with ~~to~~ a sequence selected from the group consisting of SEQ ID No: 8, 15, 24, 25, 32, 40, 48, 52, and 54.

27. (Withdrawn, Currently Amended) A plant selected according to the method of claim 24, carrying a ~~NFR~~ Nod-factor binding protein allele encoding a variant ~~NFR~~ Nod-factor binding polypeptide.

28. (Withdrawn, Currently Amended) The method of claim 24 wherein the selected plant has enhanced nodulation frequency and/or root nodule occupancy and/or enhanced symbiotic nitrogen fixation ability relative to a control plant comprising a non-variant ~~NFR~~ Nod-factor binding allele.

29. (Withdrawn) The method according to claim 28, wherein said plant is a legume.